

### Claims

What is claimed is:

1. A portable data terminal comprising:
  - a bar code reader;
  - a flexible housing having an outer surface with energy absorbing material connected thereto for an initial absorption of a physical shock energy exerted thereupon;
  - a stiff enclosure for at least partially encapsulating a circuit board; and
  - a resilient member interposed between the housing and the stiff enclosure, the resilient frame and the stiff enclosure act together to further dampen the physical shock energy.
2. The terminal of claim 1, the flexible housing comprising a component rotatable about a junction of the housing to provide for further absorption of energy, if the physical shock energy is above a predetermined level.
3. The terminal of claim 2, the flexible housing including a top portion and a lower portion with the rotatable component as part of the top portion.
4. The terminal of claim 2, the junction being at a point of connection between a handle of the data terminal and a base of the lower portion.
5. The terminal of claim 3, the handle comprising rubber insert molding.
6. The terminal of claim 3, the circuit board has a length shorter than a length of the rotatable component.
7. The terminal of claim 1, the energy absorbing material comprising a raised bumper assembly.
8. A method for mitigating physical shock energy exerted on a hand held terminal comprising:

employing a bumper assembly placed on an outer surface of the hand held terminal housing to absorb an initial portion of the shock energy; and

employing an internal bumper system interposed between the housing and at least one circuit board within the housing, to further absorb the shock energy.

9. The method of claim 8 further comprising providing portions of the housing that are displaceable with respect to each other such that displacement of the portions further dampens the shock energy.

10. A portable data terminal comprising:

a plurality of circuit boards mounted on a sub frame, being at least partially encased by a rigid body positioned within the terminal housing; and

a resilient member interposed between the rigid body and the housing, the resilient member and the rigid body for absorption of a physical shock energy exerted upon the terminal housing.

11. The portable data terminal of claim 10, the rigid body selected from the group consisting of metals and plastic.

12. The portable data terminal of claim 10, the resilient member forming an elastic frame around the rigid body.

13. The portable terminal according of claim 12, the rigid body shifts laterally within the resilient member, if the physical shock energy exceeds a predetermined level.

14. The portable terminal of claim 10, the plurality of circuit boards including a unique circuit board being readily interchangeable at a manufacturing level as to enable a modular assembly of the portable terminal.

15. The portable terminal of claim 14, the rigid body comprising at least one rigid frame maintaining mounting points shared between the unique circuit board and other circuit boards.
16. The portable terminal of claim 14, the plurality of circuit boards being encased by the rigid frame as to maintain a substantially planar configuration when a physical shock is exerted on the portable terminal.
17. A portable data terminal comprising:  
means for maintaining a planar configuration for a printed circuit board of the data terminal; and  
means for absorbing a physical shock energy exerted on the data terminal.
18. A portable data terminal comprising:  
a bar code reader,  
a circuit board assembly enclosed within a flexible housing;  
energy absorbing means attached to the flexible housing;  
enveloping means for at least partially encasing the circuit board; and  
resilient cushion means interposed between the housing and the  
enveloping means for reducing a shock energy level to a level acceptable by the circuit board assembly.
19. A method for manufacturing a plurality of bar code reading mobile terminal types, comprising:  
providing common components for the mobile terminal types that are respectively generic to the types; and  
assembling a particular mobile terminal type by at least a subset of the respective common components.
20. The method of claim 19, further comprising assembling the particular mobile terminal type by components that are unique for the particular mobile terminal.

21. The method of claim 20, further comprising receiving a customer order for a specific mobile terminal type, and fabricating the specific type via employment of the common and unique components.
22. The method of claim 21, further comprising providing a generic shock assembly connected to an outer surface of the housing.
23. The method of claim 21, further comprising:  
providing a rigid frame having mounting parts shared between circuit boards of the common and the unique components, the rigid frame for maintaining a planar configuration of the circuit boards.
24. The method of claim 23, further comprising:  
providing a resilient member interposed between the housing and the rigid frame for reducing a shock energy level to a level acceptable by the circuit boards.